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UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/773,242	01/31/2001	Yun-cheng Ju	M61.12-0331	6141

7590	11/03/2003

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EXAMINER
LAO, TIM P

ART UNIT	PAPER NUMBER
2655	

DATE MAILED: 11/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
	09/773,242	JU ET AL.
Office Action Summary	Examiner	Art Unit	
	Tim Lao	2655	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____ .

2a) ☐ This action is **FINAL**.   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-40* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-40* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on *31 January 2001* is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

    If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All b) ☐ Some * c) ☐ None of:

        1. ☐ Certified copies of the priority documents have been received.

        2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

        3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

    a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .

4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____ .

DETAILED ACTION

Drawing

1.   The drawings are objected to because in reference 144 Fig.4, the description of

the reference in the drawing is different from the description of the same reference in

the specification. Examiner will assume the description in the specification is the proper

description. A proposed drawing correction or corrected drawings are required in reply

to the Office action to avoid abandonment of the application. The objection to the

drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the
> United States before the invention thereof by the applicant for patent, or on an international application
> by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this
> title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act

of 1999 (AIPA) and the Intellectual Property and High Technology Technical

Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting

directly or indirectly from an international application filed before November 29, 2000.

Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior

to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3.   Claims 1-2, 5-6, 10-11, 15-22, 25-26, 28-30 are rejected under 35 U.S.C. 102(e)

as being anticipated by Mann (Patent No. US 6,629,071 B1).

Regarding claim 1, Mann discloses a language model for a speech recognition

system comprising:

for each word phrase ("Apple", "Music") of a list of word phrases, associating a

character string of the word phrase and the word phrase with a context cue ("for")

indicative of identifying the character string; (Col. 2, L. 54-58, part A; Col. 7, line 59;

Col. 8, line 59)

building a language model (Fig.2 , 430) as a function of the associated word

phrases and character strings (i.e. "A for Apple", "X for Music").

Regarding claim 2, the method of claim 1 wherein the language model (Fig.2,

430) comprises a statistical language model (Col. 7, L. 8-10). A probability model is a

statistical model.

Regarding claim 5, the method of claim 1 wherein associating includes building a

corpus of associated character strings and word phrases, and context cues, and

wherein building the language model (Fig.2, 430) includes accessing the corpus (see

also Col. 2, L. 59-65).

Regarding claim 6, the method of claim 1 wherein associating includes

associating a first character of each word phrase with the word phrase (Col. 2, L. 61-

64, part C and D). The claimed plurality or a list of word phrases is met by "A for Apple"

and "X for Music".

Regarding claim 10, the method of claim 1 and further comprising adjusting (assigning) a probability score for each of the associated character strings and word phrases in the language model (Col. 8, L. 54).

Regarding claim 11, the method of claim 1 wherein associating includes forming a phrase comprising the character string ("A") of the word phrase, the word phrase ("Apple") and the context cue ("for").

Regarding claim 15, the method of claim 1 wherein each of the word phrases ("Apple", "Music") is a single word (i.e. "A for Apple", "X for Music").

Regarding claim 16, the method of claim 15 wherein each of the character strings ("A", "X") is a single character (i.e. "A for Apple", "X for Music").

Regarding claim 17, the method of claim 1 wherein each of the character strings ("A", "X") is a single character (i.e. "A for Apple", "X for Music").

Regarding claim 18, Mann shows:

A computer readable medium having instructions (program codes), which when executed by a processor (computer) perform a method for recognizing characters when spoken, the method comprising: receiving input speech having a character string, a word phrase having the character string and a context cue; outputting the character string as text without the word phrase and the context cue (Col. 4, L. 23-40, part A, D, E). Responding and accepting the recognized character is an equivalent mean of outputting the character without the word phrase or the context cue.

Regarding claim 19, the computer readable medium of claim 18 and further comprising instructions for: accessing (using) a language model (large vocabulary

recognition system) indicative of a plurality of phrases, each phrase having a character string, a word phrase having the character string and a context cue (Col. 4, L. 32-34, part B).

Regarding claim 20, the computer readable medium of claim 19 wherein the language model (Fig. 2, 430) is indicative of phrases consisting essentially of associated character strings, word phrases having the character strings and context cues (i.e. "A for Apple", "X for Music").

Regarding claim 21, the computer readable medium of claim 19 wherein outputting the character string includes outputting the character string as a function of recognizing the character string using the language model (Col. 4, L. 23-40, part A-E). The means of responding and accepting comprise means of outputting to a system or to a display for interacting with the user.

Regarding claim 22, the computer readable medium of claim 21 wherein the language model comprises a statistical language model (Col. 7, L. 8-10). A probability model is a statistical model.

Regarding claim 25, the computer readable medium of claim 21 wherein outputting the character string includes outputting the character string as a function of a comparison of a recognized character string with a recognized word phrase. (Col. 4, L. 34-40, part D and E).

Regarding claim 26, the computer readable medium of claim 25 wherein when the recognized character string is not present in the recognized word phrase, the

character string that is outputted is a character string of the recognized word phrase (Col. 9, L. 16-22).

Regarding claim 28, the computer readable medium of claim 18 wherein each of the word phrases ("Apple", "Music") is a single word (i.e. "A for Apple", "X for Music").

Regarding claim 29, the computer readable medium of claim 28 wherein each of the character strings ("A", "X") is a single character (i.e. "A for Apple", "X for Music").

Regarding claim 30, the computer readable medium of claim 18 wherein each of the character strings ("A", "X") is a single character (i.e. "A for Apple", "X for Music").

Regarding claim 31, Mann shows:

A computer readable medium having instructions, which when executed by a processor, for recognizing character strings when spoken, the instructions comprising: a language model indicative of phrases consisting essentially of associated character strings, word phrases having the character strings and context cues; and

a recognition module for receiving data indicative of input speech, accessing (using) the language model (Fig.2, 430) and outputting (responding and accepting) a character string spoken by the user wherein the input speech includes a word phrase having the character string and a context cue. (Col. 4, L. 23-40, part B and E).

Regarding claim 32, the computer readable medium of claim 31 wherein the recognition module outputs only the character string (Col. 4, L. 36-40, part E). The means of responding and accepting comprise of means of outputting to a system or to a display for interacting with the user.

Regarding claim 33, the computer readable medium of claim 31 wherein the language model comprises a statistical language model (Col. 7, L. 8-10). A probability model is a statistical model.

Regarding claim 36, the computer readable medium of claim 31 wherein the recognition module outputs the character string as a function of a comparison of a recognized character string with a recognized word phrase (Col. 4, L. 34-40, part C-E).

Regarding claim 37, the computer readable medium of claim 36 wherein when the recognized character string is not present in the recognized word phrase, the character string that is outputted is a character string of the recognized word phrase (Col. 9, L. 16-22).

Regarding claim 38, the computer readable medium of claim 31 wherein each of the word phrases ("Apple", "Music") is a single word (i.e. "A for Apple", "X for Music").

Regarding claim 39, the computer readable medium of claim 38 wherein each of the character strings ("A", "X") is a single character   (i.e. "A for Apple", "X for Music").

Regarding claim 40, the computer readable medium of claim 31 wherein each of the character strings ("A", "X") is a single character (i.e. "A for Apple", "X for Music").

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5.   Claims 7-9, and 12-14 rejected under 35 U.S.C. 103(a) as being unpatentable

over Mann in view of Franceschi (Patent No. US 6,321,196 B1).

Regarding claim 7, Mann shows the association of the first character string of the

word phrase with the corresponding word phrase (Col. 2, L. 61-64, part C and D), but

does not explicitly show associating includes associating another character of at least

some of the word phrases, other than the first character, with the corresponding word

phrases. However, Franceschi teaches the associating includes associating another

character of at least some of the word phrases, other than the first character, with the

corresponding word phrases (Col. 4, L. 65-68). Examples of Franceschi's

interpretations are "N as in Knew" or "O as in Hour" wherein "N" and "O" are characters

of the word phrases, other than the first characters, being associated with their

respective word phrases, "Knew" and "Hour. It would have been obvious to a person of

ordinary skill in the art at the time of the invention was made to modify Mann by

including the association of another character as taught by Franceschi in order to

enhance the language model of Mann since the advantage, with all possible

association of the character strings to the word phrase, is that the language model can

be applied to other languages beside English where the language pronunciation of a

word phrase may not necessary or often begin with the first letter of the word phrase.

Regarding claims 8 and 9, Mann does not explicitly show associating to include

associating each character of at least some of the word phrases with the

corresponding word phrases and associating includes associating each character of

each word phrase with the corresponding word phrase. Mann shows the association of

the first character (Col. 2, L. 61-64, part C and D), while Franceschi teaches the

association of another character, other than the first (Col. 4, L. 65-68). The association

of each character of some word phrase and each character of each word phrase is

merely a combination of the association of the first character with the word phrase and

the association of plurality of other characters of the same word phrase. It would have

been obvious to a person of ordinary skill in the art at the time of the invention was

made to modify Mann by including the association of another character as taught by

Franceschi in order to enhance the language model of Mann since the advantage, with

all possible association of the character strings to the word phrase, is that the language

model can be applied to other languages beside English where the language

pronunciation of a word phrase may not necessary or often begin with the first letter of

the word phrase.

Regarding claims 12-14, Mann does not specifically use the word phrase

"AS IN" as the context cue, the claimed Japanese character and the claimed Chinese

character, but Franceschi teaches "AS IN" with the same purpose as a context cue (Col.

6, L. 38). In addition, one of ordinary skill in the art would have readily recognize that

any characters in any languages may be used as a context cue, such as the known

claimed Chinese character and the known claimed Japanese character. It would have

been obvious to a person of ordinary skill in the art at the time the invention was made

to modify Mann with "AS IN" as taught by Franceschi, the known claimed Chinese

character or the known claimed Japanese character as context cue since these

characters have similar meaning as "AS IN" in English during spelling of words.

Therefore, it would be easier and convenient for the Chinese speaker to use the known

claimed Chinese character or the Japanese speaker to use the known claimed

Japanese character to perform the association during spelling of words.

6.   Claims 3-4, 23-24, 27, 34-35 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Mann in view of Meteer et al. ("Statistical language modeling

combining N-gram and context-free grammars," April, 1993).

Regarding claims 3-4, 23, 27 and 34-35, Mann does not show that the language

model is either N-gram or context-free-grammar. However, Meteer teaches language

modeling using N-gram and Context-free-grammar. On page II-37 Col. 1, Meteer

explains that Context-free-grammar is a powerful tool used to describe most of the

structure in spoken language and it uses statistics to provide probabilities to determine

whether a word sequence is accepted or rejected by the grammar. Meeter also points

out that language models based on N-gram models have been shown to be useful for

improving the accuracy of speech recognizers and can be trained with large amount of

data to estimate the model parameters. It would have been obvious to a person of

ordinary skill in the art at the time of the invention was made to include the integration

of N-gram and Context-free-grammar as taught by Meteer in the language model as

provided by Mann in order to produce a robust statistical grammar which explicitly

incorporates linguistic and semantic structure as suggested by Meeter (page II-37 Col.

1).

Regarding claim 24, Mann shows the system outputs the correct determined character (Col. 4, L. 36-40). Mann does not show that the language model is N-gram. However, Meteer teaches language modeling using N-gram. It would have been obvious to a person of ordinary skill in the art at the time of the invention to include the use of N-gram as taught by Meteer in the language model as provided by Mann so that there is a higher probability that the output character is the correct character because N-gram improves the accuracy of speech recognition as suggested by Meteer (page II-37, Col. 1).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

A). Brown et al., "Large vocabulary connected speech recognition system and method of language representation using evolutional grammar to represent context free grammars," US Patent No. 5,719,997.

B). Brotman et al., "Disambiguation of alphabetic characters in automated call processing environment," US Patent No. 5,917,890.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tim Lao whose telephone number is 703-305-8955. The examiner can normally be reached on M-F, 8:30am-5pm.
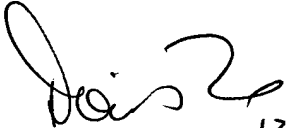
If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Doris To can be reached on 703-305-4827. The fax phone number for the

organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to the receptionist whose telephone number is 703-305-

9000.

                                                    Tim Lao
                                                    Examiner
                                                    Art Unit 2655

TL
10/24/03

DORIS H. TO   10/30/03
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800